

CLAIMS

What Is Claimed Is:

1. An automated system for predicting a life of any of a plurality of batteries, the automated system comprising:
a data entry system, the data entry system being programmed to allow a user to select:
 - a battery;
 - a vehicle;
 - a climate; and
 - a driving habit;a computer communicatively coupled to the data entry system, the computer comprising:
 - a storage device, storing battery data, vehicle data, climate data, and driving habit data; and
 - a processing unit, the processing unit being programmed to receive the battery, vehicle, climate, and driving habit selections from the data entry system, retrieve corresponding data from the storage device, and to determine a life of the battery when used in the selected vehicle in the selected climate in the selected driving habit.
2. The automated system as defined in claim 1, wherein the battery data comprises a lookup table of battery construction data.
3. The automated system as defined in claim 1, wherein the vehicle data comprises a lookup table including at least one of a temperature versus time, a voltage versus time, and a current versus time.
4. The automated system as defined in claim 1, wherein the climate comprises a geographic region, and the climate data comprises corresponding seasonal and mean temperature data.

5. The automated system as defined in claim 1, wherein the data entry system is communicatively coupled to the computer through a computer network connection.
6. The automated system as defined in claim 5, wherein the network connection is a local area network.
7. The automated system as defined in claim 5, wherein the network connection is a wide area network.
8. The automated system as defined in claim 5, wherein the network connection is an internet link.
9. The automated system as defined in claim 1, wherein the computer and the data entry system comprise a kiosk.
10. The automated system as defined in claim 1, wherein the processing unit is programmed to model a plurality of failure modes for the battery, determine the most likely failure mode for the selected vehicle, climate, and driving habit, and determine an expected time to failure for this mode.
11. The automated system as defined in claim 10, wherein the plurality of failure modes includes at least two of a positive paste shedding failure, a positive grid corrosion failure, a positive grid growth failure, a negative paste shrinkage failure, a water loss failure, and a separator degradation failure.
12. The automated system as defined in claim 10, wherein the failure modes are determined based on empirical constants determined from battery failures.

13. The automated system as defined in claim 1, wherein the driving habit comprises an average and a severe driving habit.
14. The automated system as defined in claim 1, wherein the driving habit data comprises a lookup table of temperature versus time.
15. A computerized system for selecting a battery for use in a selected vehicle, operated in a selected climate, the computerized system comprising:
a communications network;
a first computer coupled to the communications network, the first computer being programmed to:
 prompt a user to select a battery, a driving habit, and a vehicle; and
 transmit the selected battery, driving habit, and vehicle through the communications network;
a second computer coupled to the communications network, the second computer being programmed to:
 receive the battery, the vehicle, the climate, and the driving habit selection from the user;
 calculate a life expectancy for the battery as a function of the selected vehicle, climate, and driving habit; and
 transmit the calculated life expectancy to the first computer.
16. The computerized system as defined in claim 10, wherein the communications network comprises an internet link.
17. The computerized system as defined in claim 11, wherein the first and second computers each comprise an e-mail server.
18. The computerized system as defined in claim 10, wherein the selected vehicle determines an expected voltage draw versus time, and expected current draw versus time, and an expected temperature versus time.

19. The computerized system as defined in claim 10, wherein the selected climate determines an expected mean operational temperature for the battery.
20. A method for predicting the life of a battery, the method comprising the following steps:
modeling an aging mechanism for a battery, the aging mechanism for the battery being determined experimentally as a function of:
 at least one empirical constant determined from a failed battery;
 a plurality of battery construction parameters;
 a temperature versus time;
 a current versus time; and
 a voltage versus time;
prompting a user to select a vehicle and a climate, the vehicle establishing the temperature, voltage, and current parameters versus time and the climate establishing an expected operating temperature;
modeling each of a plurality of failure modes as a function of the temperature, voltage, and current parameters, and determining which will cause failure;
calculating an expected life of the battery as a function of the expected failure mode; and
providing the expected life of the battery to the user.
21. The method as defined in claim 10, wherein the step of modeling the aging mechanism comprises the steps of obtaining empirical constants from failed batteries.